WHAT IS CLAIMED IS:

1. A method of enhancing network transmission between stations on a priority-enabled frame-based communications network, the communications network having multiple transmit priorities and transmitting frames such that a network access time to transmit a frame of a lower transmit priority is longer than a network access time to transmit a frame of a higher transmit priority, the number of transmit priorities being fixed and all stations being capable of transmitting frames at any transmit priority, for each station the method comprising:

establishing an initial transmit priority for each frame to be transmitted;

maintaining a set of initial transmit priorities assigned to frames transmitted on the communications network;

establishing a set of final transmit priorities containing highest possible priorities, one final transmit priority being associated with each member of the set of initial transmit priorities, such that a highest initial transmit priority is assigned to a highest possible priority, a next highest initial transmit priority is assigned to a next highest possible priority, and so forth; and

transmitting ordered frames onto the communications network, each frame using a final transmit priority associated with the initial transmit priority established for the each frame.

2. The method of Claim 1 wherein the step of maintaining a set of initial transmit priorities includes receiving and determining link layer priorities broadcast from other stations on the communications network and converting the link layer priorities into transmit priorities.

3. The method of Claim 2, wherein the link layer priorities

broadcast from other stations on the communications network are received in control frames broadcast by the other stations.

4. The method of Claim 3, wherein the link layer priorities are broadcast in accordance with a capabilities and status announcement protocol in which each station periodically broadcasts to all other stations capabilities and status announcements sent in control frames having status flags, the stations receiving the control frames making operational decisions based upon the status flags without further interaction amongst the stations on the communications network.

5. A method of enhancing network transmission between stations on a priority-enabled frame-based communications network, the communications network having multiple link layer priorities and multiple transmit priorities and transmitting frames such that a network access time to transmit a frame of a lower transmit priority is longer than a network access time to transmit a frame of a higher transmit priority, the number of transmit priorities being fixed and all stations being capable of transmitting frames at any transmit priority, for each station the method comprising:

establishing an initial transmit priority for each frame to be transmitted;

maintaining a set of initial transmit priorities assigned to frames transmitted on the communications network by receiving and determining link layer priorities broadcast from other stations on the communications network and converting the link layer priorities into transmit priorities, the link layer priorities being broadcast from other stations on the communications network being received in control frames broadcast by the other stations in accordance with a capabilities and status announcement protocol in which each station periodically broadcasts to all other stations capabilities and status

announcements sent in control frames having status flags, the stations receiving the control frames making operational decisions based upon the status flags without further interaction amongst the stations on the communications network;

establishing a set of final transmit priorities containing highest possible priorities, one final transmit priority being associated with each member of the set of initial transmit priorities, such that a highest initial transmit priority is assigned to a highest possible priority, a next highest initial transmit priority is assigned to a next highest possible priority, and so forth; and

transmitting ordered frames onto the communications network using a final transmit priority associated with the initial transmit priority established for the ordered frames.

6. A method of enhancing network transmission between stations on a priority-enabled frame-based communications network, the communications network supporting a set of multiple transmit priorities, each transmit priority being assigned a set of parameters controlling the network access function, the parameters being chosen from a variable parameter set, and stations transmitting frames using assigned parameter sets such that a network access time to transmit a frame of a lower transmit priority may be longer than a network access time to transmit a frame of a higher transmit priority, all stations being capable of transmitting frames of any transmit priority, and a set of transmit priorities used for frames transmitted during an interval of time being not necessarily equal to the set of multiple transmit priorities supported by the frame-based communications network, for each station the method comprising:

establishing a transmit priority for each frame to be transmitted;

determining a set of transmit priorities assigned to a set

of frames which have been transmitted on the frame-based communications network during a past interval of time by a set of all nodes of the network;

establishing a transmit parameter set for each transmit priority, one transmit parameter set being associated with each member of the set of transmit priorities, such that a highest transmit priority within the set of transmit priorities is assigned to a best transmit parameter set, a next highest transmit priority within the set of transmit priorities is assigned to a next best transmit parameter set, and so forth, such that a transmit parameter set established for a given transmit priority is the same or better than a transmit parameter set established for a priority when the set of transmit priorities used during a past interval contains all possible priorities; and

transmitting ordered frames onto the frame-based communications network for each frame using a transmit parameter set associated with a transmit priority established for the frame.

7. The method of claim 6, wherein the set of transmit parameters associated with a transmit priority includes a value assigned to identify a physical layer priority to used for transmitting a frame onto the frame-based communications network.

8. The method of claim 6, wherein the set of transmit parameters associated with a transmit priority includes a duration of a pre-transmission access delay, wherein, upon determination that the frame-based communications network is available for a new frame transmission, a station waiting to transmit a frame with a lower priority will wait longer than a station waiting to transmit a frame with a higher priority.